THIS OPINION WAS NOT WRITTEN F-OR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 43

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ICHIRO TONAI

Appeal No. 97-0168
Application No. 08/348,991[1]

ON BRIEF

Before BARRETT, FLEMING, and GROSS, Administrative Patent Judges.

GROSS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 23, 25, 28, 30 through 34, 37, 38, 41, 42,

[1] Application for patent filed November 28, 1994. According to appellant, the application is a continuation of Application 08/005,419, filed January 19, 1993; which is a continuation of Application 07/612,435, filed November 14, 1990, both abandoned.

44, 46, and 48, which are all of the claims pending in this application.

The appellant's invention relates to a light receiving device such as a photodiode array including plural light detecting regions surrounded by a depleted region of an absorption layer formed on a semiconductor material. Claim 23 is illustrative of the claimed invention, and it reads as follows:

23. A light receiving device comprising;
a semiconductor layer made of a first conductivity type InP;
an absorption layer formed on the semiconductor layer and made of InGaAs;
a window layer formed on said absorption layer and made of InP;
a plurality of second conductivity diffused light detecting regions formed at and along predetermined portions of said window layer, each of said second conductivity diffused light detecting regions outputting an electric signal when a light signal is made incident into the respective light detecting region; and
second conductivity diffused collecting regions formed at and below said window layer down to said absorption layer, said second conductivity diffused collecting regions being provided at portions of said window layer extending between adjacent ones of said second conductivity diffused light detecting regions;
wherein said second conductivity collecting regions penetrate said window layer to reach said light detecting regions; and
one of the collecting regions is provided towards an edge of said device and a boundary between said one collecting

region and said absorption layer is exposed to an edge surface of the device.

No prior art references of record have been relied upon by the examiner in rejecting the appealed claims.

Claims 23, 25, 28, 30 through 34, 37, 38, 41, 42, 44, 46, and 48 stand rejected under 35 U.S.C. § 112, first paragraph, as the examiner states (Answer, page 4) that "the claimed invention was not described in the original disclosure in such full, clear, concise and exact terms as to enable any person skilled in the art to make and use the same."[2]

Reference is made to the Examiner's Answer (Paper No. 36, mailed May 29, 1996) for the examiner's complete reasoning in support of the rejections, and to the appellant's Brief (Paper No. 35, filed March 4, 1996) and Reply Brief (Paper No. 37, filed July 29, 1996) for the appellant's arguments thereagainst.

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[2] There are three requirements under 35 U.S.C. § 112, enablement, written description, and best mode. Although the examiner has stated the basis for the rejection in terms of enablement, the statement of the issues and the explanation following the statement of the rejection indicate that the basis for the rejection actually is a failure to provide an adequate written description. Accordingly, we will consider the adequacy of the written description.

OPINION

We have carefully considered the claims, the applied prior art references, and the respective positions articulated by the appellant and the examiner. As a consequence of our review, we will reverse the inadequate written description rejection of claims 23, 25, 28, 30 through 34, 37, 38, 41, 42, 44, 46, and 48.

The examiner states that "[t]he 'p-n junction of the collecting region is exposed to an edge surface'[3] is new matter, not originally disclosed or described here." The examiner further asserts

> that there was no mention anywhere in the specification of any "junction exposed at an edge", nor was there any indication that the drawings here represent the entire device or that the boundaries of the drawing represent physical boundaries or "edge surfaces" of the device, and absent any specific indication, there would be no reason to suppose that the drawings were supposed to represent a physical "edge" of the device, rather than merely draftsman's conventions. (answer, page 4)

We disagree with the examiner. We find that the language used in the specification in combination with the drawings

[3] The actual language of the claims, as amended on November 28, 1994, is "a boundary between said one collecting region and said absorption layer is exposed to an edge surface of the device."

(particularly Figures 1A and 1B taken with Figure 3) would lead one of ordinary skill in the art to conclude that the sides of Figures 1A and 1B are actually the edges of the device.

Figure 3 clearly is shown as a complete device, as it is depicted with a particular shape rather than merely as a rectangular block. As pointed out by appellant (Brief, page 8), the description of Figure 3 (Specification, page 11) indicates
that it is "an optical connector which incorporates the light-receiving device shown in Figs. 1A and 1B" (underlining by appellant). Appellant concludes from this language that the connector "is obviously configured to incorporate an entire photo diode and not a partial diode." We agree that the language does imply that the device of Figures 1A and 1B is a complete device.

Further, appellant specifies (Specification, page 9) that in Figures 1A and 1B, "five light-detecting regions are formed in a line." Figure 1A also shows that there are five electrodes 8,

one for each light-detecting region. Also, as appellant points out (Brief, page 9), the connector of Figure 3 includes "[s]ix bonding wires extending from p-side electrodes 8 and the extracting electrode 6" (Specification, page 11) and "each five light-detecting regions are optically coupled to each five optical fibers independently" (Specification, page 12). Thus, all of the elements of Figure 3 match up with the elements of Figures 1A and 1B and vice versa. In addition, the portions of element 5 at the edges of Figures 1A and 1B differ in width from the portions between elements 1. Thus, the language quoted above together with the drawings themselves indicates that the device of Figures 1A and 1B is a complete package, as shown.

The examiner further states (Answer, page 5) that appellant's arguments attached to the April 1994 amendment that

"having such an 'exposed PN junction' would 'eliminate the need for a metal electrode' (6 is Figs. 1A-1B)" are inconsistent with viewing Figures 1A and 1B as complete devices, since 1A and 1B include element 6. However, that an element is no longer necessary does not mean that it cannot or

even should not be included. As appellant argues, "because the PN junction of the embodiment shown in Figs. 1A and 1B is exposed to an edge of the photo diode, such an electrode is not absolutely necessary." Appellant refers to the extracting electrode as "not a critical component but is merely an additional component which may, under certain circumstances be preferred." (main brief, page 14) Accordingly, the purpose for exposing the boundary between the one collecting region and the absorption layer to an edge surface of the device is not inconsistent with the drawings. Therefore, we cannot sustain the new matter rejection.

CONCLUSION

The decision of the examiner to reject claims 23, 25, 28, 30 through 34, 37, 38, 41, 42, 44, 46, and 48 under 35 U.S.C. § 112, first paragraph, is reversed.

REVERSED

LEE E. BARRETT)

Administrative Patent Judge)	
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)	BOARD OF PATENT
MICHAEL R. FLEMING)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
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ANITA PELLMAN GROSS)	
Administrative Patent Judge)	

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CUSHMAN DARBY & CUSHMAN
1100 NEW YORK AVENUE NW
NINTH FLOOR EAST TOWER
WASHINGTON, DC 20005-3918